



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/750,313 | 12/31/2003 | James Robert Clark | M02A293 | 9701 |

7590 12/15/2005

The BOC Group, Inc.
Legal Services - Intellectual Property
575 Mountain Ave.
Murray Hill, NJ 07974

EXAMINER

PHASGE, ARUN S

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1753

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/750,313

Applicant(s)

CLARK ET AL.

Examiner

Arun S. Phasge

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 28. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7, 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dubin et al. (Dubin), US 2003/0085177 A1 in view of Retallick et al. (Retallick), U.S. Patent 4,938,853.

The Dubin publication discloses the claimed method and apparatus for treating an electroless plating solution comprising a reaction vessel containing an anode, a cathode, a drain, disposing the electroless plating solution in the reaction vessel such that the anode and the cathode are at least partially immersed in the plating solution, placing the anode and cathode in electrical communication with a power source and driving an electrical current through the anode and cathode to produce a treated plating liquid (see figure 1 and page 3, example 6). The reference further discloses oxidizing plating solution

reducing agents at the anode and reducing plating solution metal salt at the cathode (see example 6 on page 3). The reference further discloses an inert gas, such as nitrogen (see figure 1 and page 2, section 0023). The reference discloses the claimed temperature as well as the heat exchanger (see figure 1 and page 2 section 0025). The reference further discloses the monitoring of the process and the metal filter to remove metal (see page 2, section 0026-0027).

The Dubin reference while disclosing the treatment of the gas, including the burning of the hydrogen contained within the gas, does not disclose the separation of liquid from the gas and scrubbing the gas to separate the hydrogen gas. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Dubin patent to separate the exhaust gas into further components, because such modification to further treat gas would have been obvious to one having ordinary skill in the art given the teaching of burning the hydrogen from the exhaust gas.

The Dubin patent does not disclose the recycle of the electroless plating solution through the drain and fed back to the vessel by a nozzle. The reference does not disclose the use of the claimed anode and cathode material as claimed.

The Retallick patent is cited to show the use of a recycle of an electroless solution to maintain the concentrations of the electroless solution (see figure 2 and col. 5, lines 45-64). The patent further discloses the same types of electrode

materials, such as stainless steel for the anode and copper for the cathode (brass is an alloy of copper) (see col. 5, line 65 to col. 6, line 3).

Consequently, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention to modify the disclosure of Dubin with the teachings of Retallick, because the Retallick patent teaches the use of recycle to control the concentration of the electroless solution and the conventional use of the electrode materials.

Claims 1-7, 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dubin et al. ('679), 6,733,679 in view of Retallick et al. (Retallick), U.S. Patent 4,938,853.

The '679 patent discloses the claimed method and apparatus for treating an electroless plating solution comprising a reaction vessel containing an anode, a cathode, a drain, disposing the electroless plating solution in the reaction vessel such that the anode and the cathode are at least partially immersed in the plating solution, placing the anode and cathode in electrical communication with a power source and driving an electrical current through the anode and cathode to produce a treated plating liquid (see figure 1 and col. 5, example 6). The reference further discloses oxidizing plating solution reducing agents at the anode and reducing plating solution metal salt at the cathode (see example 6 in col. 5). The reference further discloses an inert gas, such as nitrogen (see figure 1 and col. 3, lines 23-36). The reference discloses the claimed temperature as well as the heat

exchanger (see figure 1 and col. 3, lines 50-57). The reference further discloses the monitoring of the process and the metal filter to remove metal (see col. 3, line 58 to col. 4, lines 20).

The Dubin reference while disclosing the treatment of the gas, including the burning of the hydrogen contained within the gas, does not disclose the separation of liquid from the gas and scrubbing the gas to separate the hydrogen gas (see col. 3, lines 32-49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Dubin patent to separate the exhaust gas into further components, because such modification to further treat gas would have been obvious to one having ordinary skill in the art to separate the hydrogen from the gas given the teaching of burning the hydrogen from the exhaust gas.

The Dubin patent does not disclose the recycle of the electroless plating solution through the drain and fed back to the vessel by a nozzle. The reference does not disclose the use of the claimed anode and cathode material as claimed.

The Retallick patent is cited to show the use of a recycle of an electroless solution to maintain the concentrations of the electroless solution (see figure 2 and col. 5, lines 45-64). The patent further discloses the same types of electrode materials, such as stainless steel for the anode and copper for the cathode (brass is an alloy of copper) (see col. 5, line 65 to col. 6, line 3).

Consequently, the invention as a whole would have been obvious to one having

ordinary skill in the art at the time the invention to modify the disclosure of Dubin with the teachings of Retallick, because the Retallick patent teaches the use of recycle to control the concentration of the electroless solution and the conventional use of the electrode materials.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dubin or the '679 patent in view of Retallick as applied to claims above, and further in view of Omasa, U.S. Patent 5,730,856.

The prior art applied above fails to teach the current of the electrolysis treatment.

The Omasa patent is cited to show the range of amperes used in the art to treat an electroless solution by electrolysis (see col. 4, lines 10-16).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the prior art above in view of Omasa, because the Omasa patent teaches relative ranges of amps used to treat electroless solution by electrolysis.

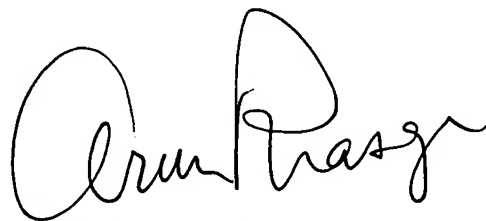
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun S. Phasge whose telephone number is

(571) 272-1345. The examiner can normally be reached on MONDAY-THURSDAY, 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Arun Phasge', with a large, stylized initial 'A'.

Arun S. Phasge
Primary Examiner
Art Unit 1753